

What is Claimed is:

1. A device for the delivery of an intraluminal prosthesis, comprising:

an elongated sleeve having a proximal end and a distal area with a distal end;

an outer shaft having a proximal end and a distal area with a distal end, said outer shaft disposed within said sleeve and movable relative to said sleeve;

a securing member disposed on said outer shaft;

wherein said prosthesis is housed within said sleeve and said prosthesis is secured to said outer shaft by said securing member.

2. The device according to claim 1, further comprising:

an inner shaft with a proximal end and a distal end, said inner shaft disposed within said outer shaft and movable relative to said outer shaft; and

an atraumatic tip disposed at said distal end of said inner shaft, said atraumatic tip having at least one side port for bleeding contrast medium adjacent to a side region of said atraumatic tip.

3. The device according to claim 1, wherein said prosthesis is in a contracted condition within said distal area of said sleeve, whereby relative longitudinal motion between said sleeve and said outer shaft exposes said prosthesis and allows the exposed portion of said prosthesis to radially expand.

4. The device according to claim 3, wherein said sleeve is slidably movable in a proximal direction relative to said outer shaft to expose said prosthesis, and wherein said

prosthesis remains secured to said outer shaft by said securing member when said prosthesis is fully exposed.

5. The device according to claim 4, wherein relative longitudinal motion between said outer shaft and said inner shaft releases said securing member from said prosthesis.

6. The device according to claim 5, further comprising a hand piece having a lever arm coupled to said sleeve, wherein actuation of said lever incrementally and precisely drives said sleeve in a proximal direction relative to said outer shaft.

7. The device according to claim 6, wherein said hand piece further comprises a tube connected to said sleeve and said lever so that actuation of said lever drives said tube in a proximal direction, and wherein movement of said tube causes said sleeve to be driven in a proximal direction.

8. The device according to claim 7, wherein said tube is biased in a distal direction by a spring.

9. The device according to claim 6, wherein said hand piece further comprises a release member coupled to said outer shaft, wherein said release member drives said outer shaft in a proximal direction relative to said inner shaft and releases said securing member from said prosthesis.

10. The device according to claim 9, wherein said inner shaft is fixedly connected to said hand piece.

11. The device according to claim 10, wherein said introducer includes a stop-cock for delivery of at least an aliquot of liquid solution from the group consisting of a contrast medium, saline, lactated ringer, dextran solution, antibacterial, or angiogenic growth factors.

12. The device according to claim 6, further comprising a port at a proximal end of said hand piece for delivery of at least an aliquot of liquid solution from the group consisting of a contrast medium, saline, lactated ringer, dextran solution, antibacterial, or angiogenic growth factors.

13. The device according to claim 1, wherein said prosthesis is a self-expanding stent.

14. The device according to claim 1, wherein said device is a delivery catheter for the placement of said prosthesis in a blood vessel.

15. The device according to claim 1, wherein said securing member is a fork-shaped element having at least one prong.

16. The device according to claim 15 wherein said at least one said prong engages with said prosthesis.

17. The device according to claim 16, wherein said prosthesis is a self-expanding stent having a wire frame covered with a tubular coating, wherein said wire frame has ends terminating in at least one loop, said prong adapted to engage with said at least one loop.

18. The device according to claim 1, wherein said securing member is disposed on said distal area of said outer shaft.

19. The device according to claim 1, wherein said distal end of the prosthesis is secured to said outer shaft by said securing member.

20. A method for emplacing a prosthesis loaded into a sleeve by compression wherein a step of compressing the prosthesis comprises:

- a) providing an expandable tube;
- b) inserting the expanded prosthesis within the expandable tube;
- c) providing a first sizing tube with an inner diameter less than the outer diameter of the prosthesis when in an expanded state;
- d) drawing the prosthesis/expandable tube combination within the first sizing tube to reduce the outer diameter of the prosthesis to a first diameter, wherein the first diameter is less than the expanded diameter of the prosthesis;
- e) providing a second sizing tube with an inner diameter less than the inner diameter of the first sizing tube;
- f) inserting the second sizing tube within the first sizing tube and drawing the prosthesis/expandable tube combination from the first sizing tube to the second sizing tube, so that the outer diameter of the prosthesis is reduced from the first diameter to a second diameter; and

g) if necessary, further reducing the outer diameter of the prosthesis by repeating steps c) through f) using additional sizing tubes with incrementally smaller inner diameters.

21. The method of claim 20, wherein the step of compressing the prosthesis comprises:

providing an elongated and expandable tube;

inserting the expanded prosthesis within the expandable tube;

providing an elongated and conically-shaped tube having an inner diameter which incrementally decreases from the proximal end to the distal end; and

drawing the prosthesis/expandable tube combination into the proximal end and towards the distal end of the conically-shaped tube to reduce the outer diameter of the prosthesis.

22 The method of claim 20, wherein the prosthesis is a self-expanding stent.

23. The method of claim 20, wherein the body canal is a blood vessel.

24 A method of compressing a self-expanding prosthesis, comprising:

a) providing an expandable tube;

b) inserting the prosthesis within the expandable tube;

c) providing a sizing tube with an inner diameter less than an outer diameter of the prosthesis when in an expanded state; and

d) drawing the prosthesis and expandable tube within the first sizing tube to reduce the outer diameter of the prosthesis.

25 The method of claim 24, wherein the sizing tube has a load end and an exit end, and wherein the inner diameter of the load is the same as the inner diameter of the exit end.

26. The method of claim 24, wherein the sizing tube is conically shaped and has a load end and an exit end, wherein the inner diameter of the load end is greater than the inner diameter of the exit end, and wherein the prosthesis and expandable tube are draw into the sizing tube from the load end.

27. The method of claim 24, further comprising:

e) providing an additional sizing tube with an inner diameter less than the inner diameter of the sizing tube; and

f) inserting the additional sizing tube within the sizing tube and drawing the prosthesis and expandable tube from the sizing tube to the second sizing tube, so that the outer diameter of the prosthesis is reduced from the first diameter to a second diameter.

28. The method of claim 27, further comprising:

g) if necessary, further reducing the outer diameter of the prosthesis by repeating steps e) through f) using additional sizing tubes with incrementally smaller inner diameters.

29. The method of claim 24, including the additional step of providing a shaft with a distal area having a securing member, and securing a distal area of the prosthesis to the shaft using the securing member, prior to step d).

30. The method of claim 24, wherein the prosthesis is a stent.

31. The method of claim 24, further comprising:

e) providing a sleeve; and

f) placing the compressed stent within the sleeve.

32. A method for deploying a prosthesis within a body canal, the method comprising:

securing the prosthesis to a shaft;

providing a sleeve covering the prosthesis;

partially releasing the prosthesis from within the sleeve;

determining whether further positioning of the prosthesis is required; and

fully releasing the prosthesis from within the sleeve by unsecuring the prosthesis from the shaft.

33. The method of claim 32 where at least one of a proximate and a distal end of the prosthesis is secured to the shaft.

34. The method of claim 32, further comprising:

repositioning the prosthesis by moving the shaft, prior to fully releasing the prosthesis.

35. The method of claim 34 wherein the distal end of the prosthesis is secured to the shaft.

36. The method of claim 34, wherein a proximal end of the prosthesis is secured to the shaft.

37. The method of claim 34, wherein imaging data is used in conjunction with the same.

38. The method of claim 35, wherein imaging data is used in conjunction with the same.